

Introduction To Monkeypox outbreak

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Introduction to Monkeypox



Outline



Understand the emergence of monkeypox

Describe routes of transmission

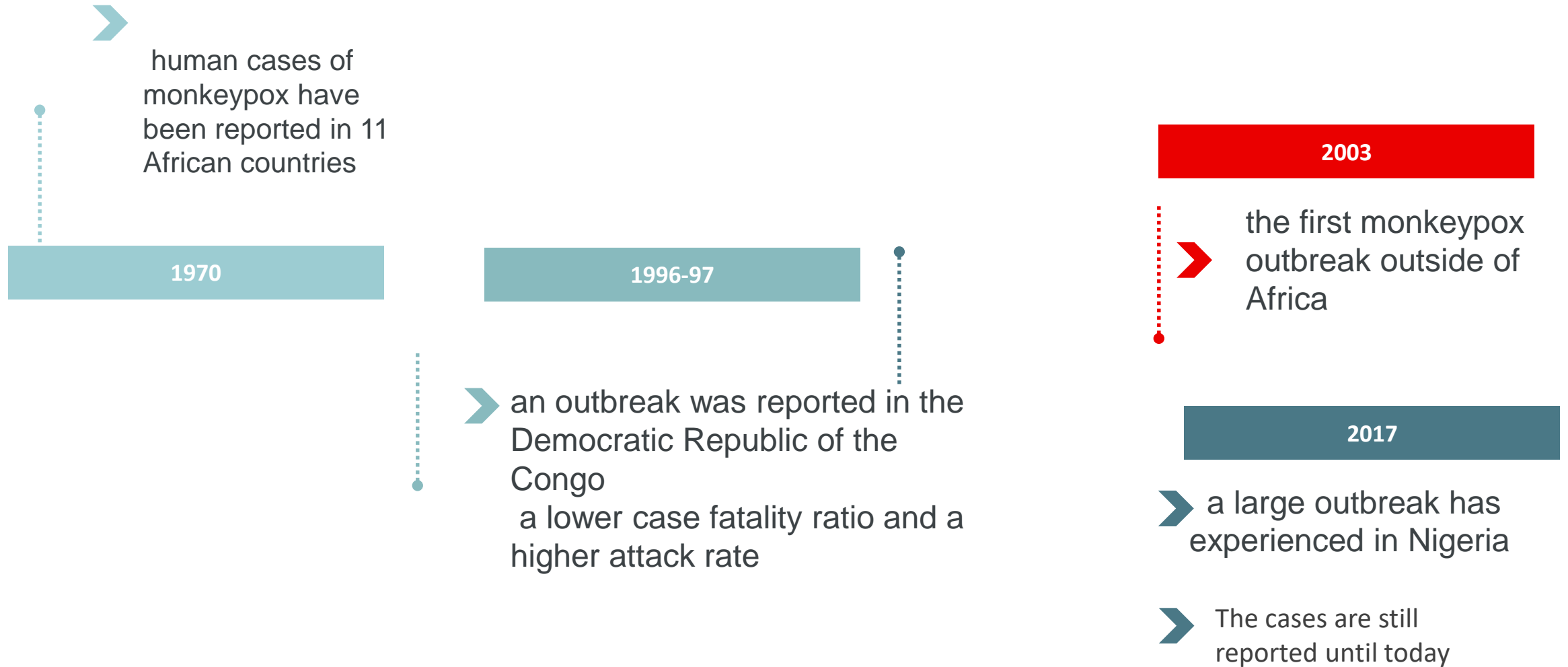
List signs and symptoms

Identify monkeypox, chickenpox, measles

Describe laboratory specimens and tests

Discuss prevention and control strategy

History



History

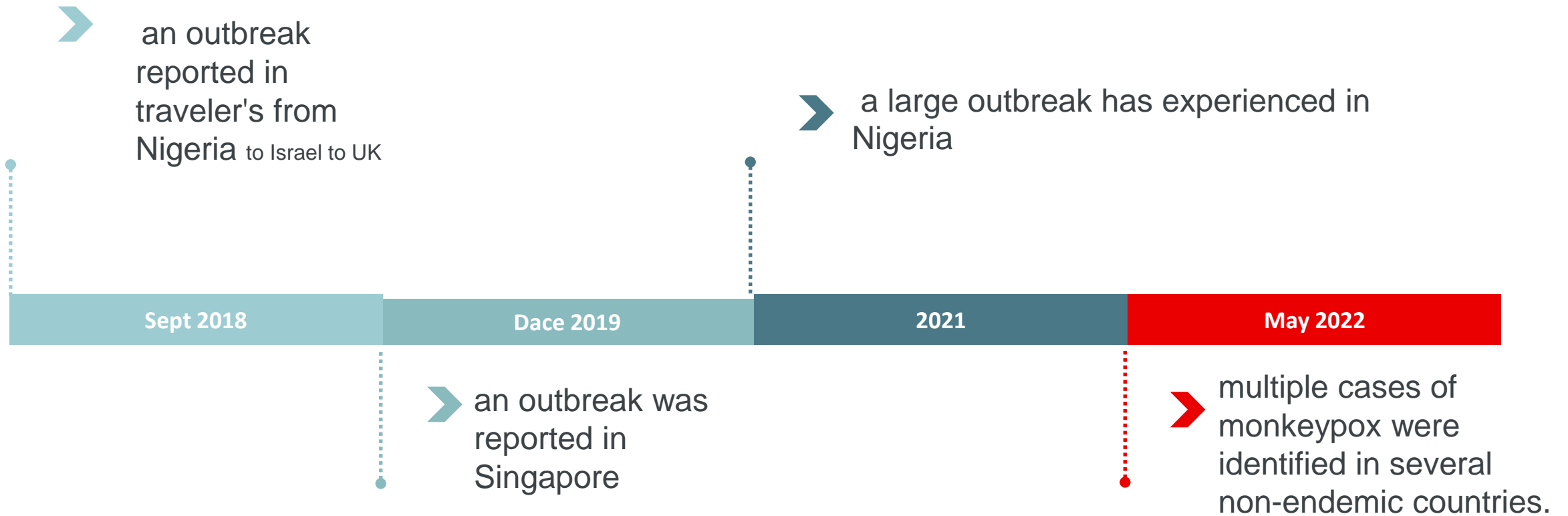


Figure 1. Geographical distribution of confirmed and suspected cases of monkeypox in non-endemic between 13 to 21 May 2022, as at 13:00.



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Data Source: World Health Organization
Map Production: WHO Health Emergencies Programme
Map Date: 21 May 2022

 **World Health Organization**
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Reported cases thus far have no established travel links to an endemic area. Based on currently available information, cases have mainly but not exclusively been identified amongst men who have sex with men (MSM) seeking care in primary care and sexual health clinics.

Table 1. Cases of monkeypox in non-endemic countries reported to WHO between 13 to 21 May 2022 as at 13:00

Country	Confirmed	Suspected
Australia	1-5	-
Belgium	1-5	1-5
Canada	1-5	11-20
France	1-5	1-5
Germany	1-5	-
Italy	1-5	-
Netherlands	1-5	-
Portugal	21-30	-
Spain	21-30	6-10
Sweden	1-5	-
United Kingdom	21-30	-
United States of America	1-5	-
Total	92	28

Figure 1. Geographical distribution of confirmed and suspected cases of monkeypox in non-endemic between 13 to 21 May 2022, as at 13:00.

Singns and symptoms



Fever

backache

Exhaustion

Headache

Chills



Muscle aches

Swollen lymph
nodes

Monkeypox









Illness



- ❖ Monkeypox is a rare viral infection that does not spread easily between people.
- ❖ It is usually a mild self-limiting illness and most people recover within a few weeks
- ❖ death occurs in up to 11% of cases, most often in younger age groups

Animal-to-human transmission



- ❑ Human infection has occurred from handling infected animals: giant poached rats, rope squirrels, and monkeys.
- ❑ Infection results from direct contact with the blood, bodily fluids, or external lesions of infected animals.
- ❑ Eating inadequately cooked meat of infected animals is a possible risk factor
- ❑ For most human infections, the source is not known.

Animal species in Africa found to host monkeypox virus

Gambian pouched rat
Cricetomys gambianus *



Dwarf dormouse
Graphiurus murinus *



Sun squirrel
Heliosciurus sp. *



Rope squirrel
Funisciurus sp. *



Colobus monkey
Colobus sp. **



Sooty mangabey
Cercocebus atys **



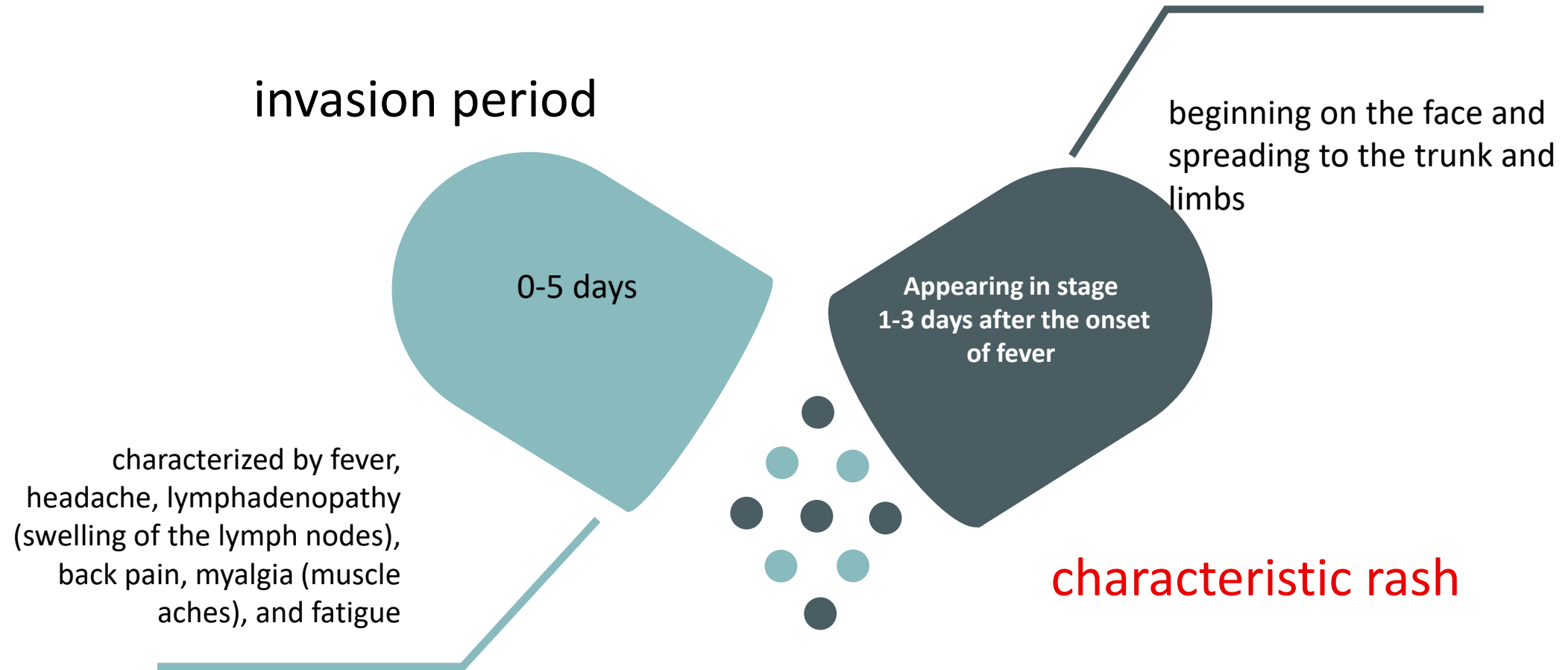
Credit: The Centers for Disease Control
and Prevention (CDC), USA

* Credit: 123rf

Monkeypox transmission: Human-to-human

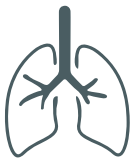
- ❑ Human-to-human transmission results from close contact with infected respiratory droplets, skin lesions, or contaminated objects.
- ❑ Health care workers and household members of active cases are at higher risk of infection.
- ❑ As human-to-human transmission is limited, most outbreaks consist of only a few cases within families

Disease course



Incubation period

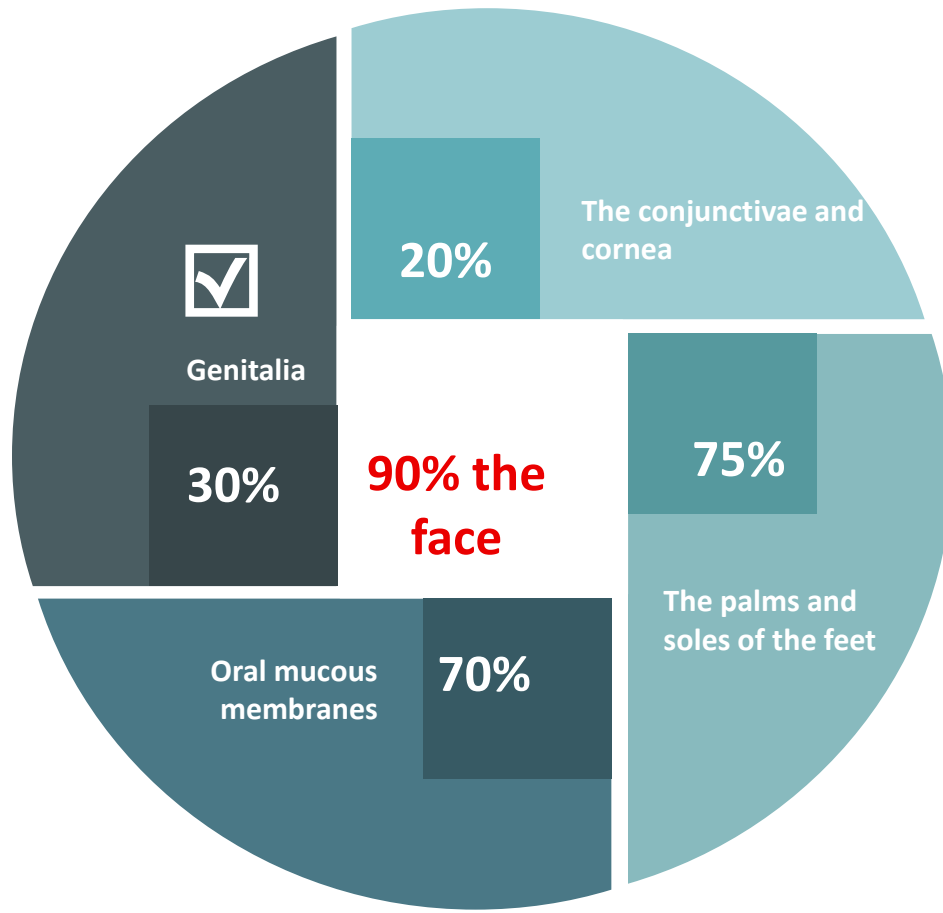
The interval from infection to onset of symptoms is usually 6 to 13 days, but can range from 5 to 21 days.



Monkeypox
usually lasts 3 to
4 weeks

Severe illness
occurs more
commonly in
children

An evolving rash



The rash lesions evolve from macules (lesions with a flat base) to papules (raised firm lesions) to vesicles (filled with clear fluid) to pustules (filled with yellowish fluid), followed by crusts

severe lymphadenopathy (swollen lymph nodes) is a distinctive feature of monkeypox and generally develops before the rash.

It may take three weeks for crusts to disappear.

Differential diagnosis

- ☐ Monkeypox can resemble other infectious illnesses with fever and rash, such as:
 - varicella (chickenpox) §
 - measles §
 - smallpox (now eradicated).
- ☐ Other conditions to ruled out:
 - ✓ bacterial skin infections, scabies, syphilis and medication allergies
- ☐ Early considerations include other febrile illnesses
- ☐ Laboratory confirmation is necessary to make a definitive diagnosis.



Clinical features

Symptoms	Monkeypox	Chickenpox	Measles
Fever	Fever > 38 °C Rash after 1-3 days	Fever to 39 °C Rash after 0-2 days	High fever to 40.5 °C, Rash after 2-4 days
Rash appearance	Macules, papules, vesicles, pustules present at the same stage on any area	Macules, papules, vesicles, present in several stages	Non-vesicular rash in different stages
Rash development	Slow, 3-4 weeks	Rapid, appear in crops over several days	Rapid, 5-7 days
Rash distribution	Starts on head; more dense on face and limbs; appears on palms and soles	Starts on head; more dense on body; absent on palms and soles	Starts on head and spreads; may reach hands and feet
Classic feature	Lymphadenopathy	Itchy rash	Koplik spots
Death	Up to 11%	Rare	Varies widely



Laboratory diagnosis

Confirmatory

Monkeypox can be confirmed in the laboratory

Best specimens

The best specimens are from lesions (fluid, roof and crust)

Best lab test

The virus can be best identified with nucleic acid tests by PCR. Antigen and antibody detection methods are not specific

Sample handling

Specimens from persons and animals should be handled by trained staff, wearing personal protective equipment and working in suitably equipped laboratories.

Surveillance

- ❖ Countries at risk should include monkeypox in their integrated disease surveillance and response system
- ❖ The goal is to detect and immediately respond to any suspected case of monkeypox
- ❖ Develop case definitions: e.g. a suspected case may be
 - ✓ an acute illness with fever $> 38^{\circ}\text{C}$, intense headache, lymphadenopathy, back pain, myalgia, and intense fatigue followed one to three days later by a progressively developing rash on the face and spreading to the body, palms of hands and soles of feet.
- ❖ Safely collect patient information and lesion samples from every suspected case for laboratory testing

Surveillance Case Definitions

Suspected Case is defined as:

An acute illness with fever $>38.3^{\circ}\text{C}$ **Or** unexplained rash **AND** two or more other signs or symptoms include (intense headache, lymphadenopathy, back pain, myalgia and intense asthenia)

Probable Case is defined as:

A case that meets the clinical case definition, is not laboratory confirmed but has an epidemiological link to a confirmed or probable case.

Confirmed Case is defined as:

A person who meets the suspected or probable case definition with laboratory confirmation (monkeypox PCR positive OR Isolation of monkeypox virus in culture)

Epi-Linked Case is defined as:

- Close contact with suspected , probable or confirmed cases
- Recent history of travel (within 21 days) to African endemic area (Central and West African countries)

Reporting

Reporting of suspected cases

The Monkeypox is an emerging incident, and suspected cases must be reported by all healthcare facilities immediately through:

- Health Electronic Surveillance Network (HESN) .
- Email: to the email of **CDCGD@MOH.GOV.SA** and copy to our email in regional Riyadh IPC
- **Gdipc-Riyadh@moh.gov.sa** using the notification form.

Note: Failure to report reportable infectious diseases by healthcare organizations and/or professionals is punishable by law.

Appendixes:

نموذج الإبلاغ الفوري لحالة مشتبها بمرض جذري القروء في المملكة العربية السعودية

Immediate Notifiable Form for A Suspected Case of Monkeypox in Saudi Arabia

Date of reporting: dd/mm/yyyy Time: Reporting person: Reporting facility: Reporting address: Reporting contact number:		تاريخ الإبلاغ: يوم/شهر/سنة وقت الإبلاغ: اسم المبلغ: الجهة المبلغ: عنوان المبلغ/الجهة: رقم التواصل للمبلغ/للجهة:	
Suspected case information Name: Sex: Date of birth: dd/mm/yyyy Age: Nationality: ID type: (specify) ID number: Contact number(s): Address: Healthcare worker: <input type="checkbox"/> Yes <input type="checkbox"/> No (specify occupation)		معلومات الحالة المشتبهة الإسم: تاريخ الميلاد: يوم/شهر/سنة العمر: الجنسية: نوع الهوية: (الرجاء التحديد) رقم التواصل: العنوان: عامل في الرعاية الصحية: <input type="checkbox"/> نعم <input type="checkbox"/> لا (الرجاء تحديد المهنة)	
Clinical Data Signs and Symptoms Fever? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No Headache? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No Back pain? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No Myalgia? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No Exhaustion? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No lymphadenopathy? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No Rash? <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No Description of rash : Other (Specify)?..... <input type="checkbox"/> Yes, onset: dd/mm/yyyy <input type="checkbox"/> No		البيانات الإكلينيكية الأعراض والعلامات حمى؟ <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا صداع؟ <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا ألم في الظهر؟ <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا الألم في العضلات؟ <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا التعب والإرهاق؟ <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا انتفاخ في الغدد الليمفاوية؟ <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا طفح جلدي؟ <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا وصف الطفح الجلدي: أخرى (حدد)؟..... <input type="checkbox"/> نعم، ابتداء من: يوم/شهر/سنة <input type="checkbox"/> لا	
Smallpox vaccination status? <input type="checkbox"/> Immune, year () <input type="checkbox"/> Not immune <input type="checkbox"/> Unknown		حالة التحصين للقاح الجدري ؟ <input type="checkbox"/> نعم، تاريخ (السنة) : <input type="checkbox"/> لا <input type="checkbox"/> غير معلومة	
History of Contact with confirmed or suspected case ? <input type="checkbox"/> Yes, date: / / <input type="checkbox"/> No		تاريخ القدوم من خارج المملكة خلال 21 يوم السابقة <input type="checkbox"/> نعم، التاريخ: / / دولة القدوم: <input type="checkbox"/> لا	
History of international trip? <input type="checkbox"/> Yes, last date: / / From: <input type="checkbox"/> No		تاريخ القدوم من خارج المملكة خلال 21 يوم السابقة <input type="checkbox"/> نعم، التاريخ: / / دولة القدوم: <input type="checkbox"/> لا	

Suspected Monkey pox
Notification Form

Infection prevention and control

- ❑ Health care workers caring for patients or handling specimens must take **standard, contact and droplet precautions.**
 - wash hands before and after caring for a patient, touching surroundings or handling specimens
 - wear appropriate personal protective equipment including gowns, gloves, masks, goggles and boots
 - ensure isolation of the patient in the hospital or at home
 - ensure proper waste disposal and environmental decontamination
 - ensure safe and dignified burial

Infection Prevention and Control

Monkeypox is believed to be transmitted between humans via respiratory droplet and contact with contaminated materials. When handling a suspected or confirmed, the healthcare provider should adhere to standard precautions in addition to empirical precautions.

Early recognition and source control.

- Health care workers should be aware of the signs and symptoms of monkeypox and are encouraged to apply them to hospital visitors for early detection and isolation.
- Use of signage to remind HCWs of the signs and symptoms.
- Respiratory hygiene is another important measure that should be applied to all visitors.
- Whenever possible, patients who are identified as suspected cases of monkeypox should be placed in separate area from other areas of care.

Application of standard precautions for all patients.

Strict adherence to standard precautions should be followed whenever handling patients.

Theses include:

- Proper hand hygiene.
- Use of PPEs in a correct sequence (gowns, masks, goggles if splashes is expected, and gloves).
- Sharp safety.
- Aseptic technique.
- Environmental cleaning and disinfection.

Patient placement:

- All cases should be placed in a single negative pressure room when ever possible.
- If the capacity doesn't allow, the case should be placed In a single room with the use of portable HEPA filter.
- With the rapid influx of cases, chortling of cases in the same room should be considered with proper signage placed indicating care of cases.
- Cohorting of cases should be considered only when there is a significant shortage in single rooms with the following consecrations:
 - Place the patients with distance between beds.
 - Place physical separations between the beds.
 - Disallow any visitors or caregivers.
 - Avoid preforming aerosol generating procedures inside the room.
 - Those who are transferring the patient should adhere to isolation precautions and wear proper PPEs, as well as placing a isolation transportation signage.

Environmental cleaning and disinfection:

- Ordinaries and workers who are responsible of cleaning and disinfection should wear appropriate PPEs when cleaning rooms housing of patients.
- In-patient rooms should be cleaned and disinfected at least daily and at the time of patient transfer or discharge.
- More frequent cleaning and disinfection may be indicated for high-touch surfaces and following aerosol producing procedures (e.g. tables, hard-backed chairs, doorknobs, light switches, remotes, handles, desks, toilets, sinks)
- Cleaning and disinfection of the environmental surfaces should be with approved MOH disinfectant, freshly prepared sodium hypochlorite solution 1000 ppm with consideration to the contact time in accordance with manufacturer's instructions for environmental surface disinfection.
- Linens and clothing should be collected and put in bags inside room before the cleaning process begins.
- Avoid shaking and rigorous handling of linens to prevent spread of infectious materials.

Outbreak response

- Each suspected or confirmed case of monkeypox requires an immediate response and prevention measures must be implemented
- Report all case information to health authorities.
- Initiate outbreak coordination.
- Put in place laboratory confirmation, contact tracing, active search, tracking, and enhance surveillance.
- Initiate community education and risk communication.
- Institute infection prevention and control measures in all situations.

The incidence of one case of confirmed monkeypox from any category (healthcare worker or patient) among healthcare facilities is considered as an outbreak and must be notified immediately.

Key messages

- Ensure strict implementation of **Visual Triage 24/7** for early detection and isolation of suspected cases from initial checkpoint.
- Infection Control Team must read the guidelines carefully & disseminate information to all staff.
- Update the policies & procedures based on Waqya updates.
- Healthcare workers in all healthcare facilities must be well trained about updated guidelines & infection control measures.
- Ensure emergency preparedness.
- Ensure regular meetings to resolve any gaps.

CONCLUSION

- Monkeypox is an emerging disease
- Monkeypox can be seen in endemic countries or anywhere in the world
- Report any suspected case to concerned authorities.
- Take strict precautions to prevent the spread.



Thank you